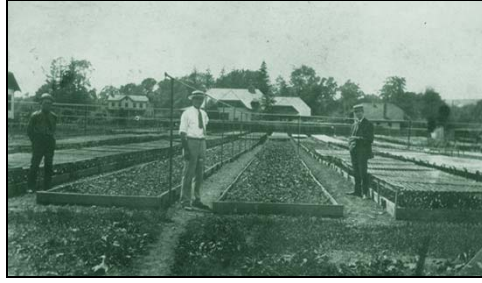


# PRINCETON NURSERIES KINGSTON SITE CULTURAL LANDSCAPE REPORT



## APPENDIX A: ENTRY LANDSCAPE & FLEMER ARBORETUM TREE INVENTORY & ASSESSMENT

### A. TREE ASSESSMENT PROTOCOL

Heritage Landscapes identified the Kingston Site entry landscape and Flemer Arboretum trees by genus and species from field observation and keyed tree species to botanical sources as required. Trees were assessed and mapped using previous maps and a recent aerial photograph for field mapping work. Trees were assessed for canopy, trunk, and root condition with the tree condition codes recorded as shown on *Plan 13, Entry & Flemer Arboretum Tree Inventory Plan*. This mapping with tree condition layer is a valuable product of this report. On-going monitoring, care, and maintenance are needed to maintain the tree collection as an important landscape feature. The tree inventory and assessment serves to document the existing trees within the landscape, as no previous tree inventory existed. A complete list of tree species and conditions is included in this appendix.

The canopy, trunk, and root codes are as follows:

<b>Canopy</b>	A	Good: full crown, vigorous growth, no immediate care required
	B	Fair: minor problems, minimal deadwood with a diameter of less than 3 inches, minor pruning recommended
	C	Poor: major problems, deadwood of over 3 inches and up to 6 branches, major pruning recommended, monitor for hazard, possible removal
	D	Failing: major dieback in crown, near dead, standing dead, hazard to be removed
	E	Dead: stump, fallen tree, or depression (tree identified if possible)
<b>Trunks</b>	1	No visible damage
	2	Damage including wounds, fungus, cracks, or decay
<b>Roots</b>	U	Unrestricted: open
	R	Restricted: Enclosed within 8-10 feet on one side by roads, sidewalks, buildings, fences, or other substantial objects

When fully inventoried and assessed, a coded tree may have a code that consists of 6-9 characters. The first 2 or 3 letters designate the genus and species. The plant list provided in this appendix keys the genus and species by code. The next 1 to 3 numbers refer to the diameter of the tree at breast

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height (DBH) in inches. For trees with multiple stems, the diameter of individual trunks was recorded at dbh and added together to find the total diameter. The following letter (A-E) shows the condition of the canopy. The next number (1 or 2) refers to the condition of the trunk. The next letter (U or R) designates the condition of the roots. If there is a T following the root code, it means the tree has two stems, if there is an M as following the root code it means the tree has three or more stems. For the example of Ap45B1UM, Ap is the species of the tree, Japanese maple (*Acer palmatum*), and 45 is the diameter at breast height in inches. The B code denotes a tree canopy that is in fair condition and may require minimal pruning, 1 signifies a trunk in good condition, and U indicates an unrestricted root zone. The M indicates it is a multi-stemmed tree.

## B. TREE ASSESSMENT RESULTS

In summary, the assessment results led to some overall observations. A total of 97 trees were observed, assessed, and documented in the preserved lands. Efforts focused on the entry landscape and Flemer Arboretum; a few specimen trees were also inventoried and assessed. Of the trees inventoried 1 was standing dead. The variety of tree types represented within the landscape includes 22 genera and 33 species. Many of the trees are mature and some exhibit natural decline. The largest tree is a 14-stem saucer magnolia (*Magnolia x soulangiana*) that measures 98 inches in diameter. The most abundant tree genus inventoried is the oak, which includes white (*Quercus alba*), pin (*Quercus palustris*), willow (*Quercus phellos*), and red (*Quercus rubra*). In total, 16 oak trees were inventoried at the preserve entrance and Flemer Arboretum, comprising about 19% of the trees inventoried.

The following charts summarize the results of the assessment of tree canopy, trunk, and root conditions as well as by DBH.

Canopy Health						
	A	B	C	D	E	Total
Number of Trees	9	30	52	5	1	97
% of Trees	9%	31%	54%	5%	1%	100%

Trunk Condition			
	1	2	Total
Number of Trees	87	10	97
% of Trees	90%	10%	100%

Root Space			
	Restricted	Unrestricted	Total
Number of Trees	14	83	97
% of Trees	14%	86%	100%

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Tree Counts by Diameter Breast Height (DBH)							
	Under 4"	4"-8"	9"-16"	17"-24"	25"-31"	32" and Up	Total
Number of Trees	13	5	31	31	4	13	97
% of Trees	13%	5%	32%	32%	4%	13%	100%

Overall, the trees in the Kingston Site entry landscape and Flemer Arboretum are in fair to poor condition. Over half (54%) of the trees exhibit major canopy problems and require considerable maintenance or pruning to ensure their continued presence in the landscape. Of the inventoried trees, 30 (31%) were coded B, needing minor pruning or tree work with 9 (9%) coded A, indicating no immediate pruning required. An additional 5 (5%) of the trees were coded D, indicating these trees may be beyond repair and should be removed. Tree trunks are generally in good condition; 87 (90%) of the trees show no damage or have healed minor trunk damage sustained in the past. The majority of the trees (86%) grow in unrestricted conditions. The remaining 14% have some type of obstacle, such as a drive, located within 8 feet of the trunk. The majority of the trees (62 or 64%) have a DBH of between 9 inches and 24 inches with only 17 trees (17%) measuring 25 inches or greater. These larger trees likely date from before the historic period. Considered in total, the trees that grow in the Kingston Site entry landscape and Flemer Arboretum are in poor to fair condition. The vegetation and tree canopy is an important feature to the overall character and quality of the former nursery landscape and visitor entry experience.

The following chart presents the detailed tree assessment information.

Code	Plant Name	DBH	Crown	Trunk	Roots	Number of Trees with this Code
Ac6B1U	<i>Acer campestre</i>	6	B	1	U	2
Ap12C2U	<i>Acer palmatum</i>	12	C	2	U	1
Ap14C1U	<i>Acer palmatum</i>	14	C	1	U	1
Ap14E2U	<i>Acer palmatum</i>	14	E	2	U	1
Ap16B1U	<i>Acer palmatum</i>	16	B	1	U	1
Ap23B2U	<i>Acer palmatum</i>	23	B	2	U	1
Ap45B1UM	<i>Acer palmatum</i>	45	B	1	U	1
Asp31C1U	<i>Acer species</i>	31	C	1	U	1
Co25C1UM	<i>Celtis occidentalis</i>	14	C	1	U	1
Cc12C2U	<i>Cercis canadensis</i>	12	C	2	U	3
Csp18B1U	<i>Chamaecyparis species</i>	18	B	1	U	3

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Csp20B1U	<i>Chamaecyparis</i> species	20	B	1	U	1
Ck32B1UM	<i>Cornus kousa</i>	21	B	1	U	1
Cj18C1U	<i>Cryptomeria</i> <i>japonica</i>	18	C	1	U	2
Fs11C2U	<i>Fagus sylvatica</i>	11	C	2	U	1
Fs21B1U	<i>Fagus sylvatica</i>	21	B	1	U	1
Fs27C1R	<i>Fagus sylvatica</i>	27	C	1	R	1
Fsp18C1U	<i>Fraxinus</i> species	18	C	1	U	1
Fsp24C1R	<i>Fraxinus</i> species	24	C	1	R	1
Fsp24C1U	<i>Fraxinus</i> species	24	C	1	U	1
Fsp32D1U	<i>Fraxinus</i> species	32	D	1	U	1
Fsp33C1U	<i>Fraxinus</i> species	33	C	1	U	1
Gb12C1U	<i>Ginkgo biloba</i>	12	C	1	U	3
Gb14B1U	<i>Ginkgo biloba</i>	14	B	1	U	1
Gb15A1U	<i>Ginkgo biloba</i>	15	A	1	U	1
Gb18B1U	<i>Ginkgo biloba</i>	18	B	1	U	1
Gb21B1U	<i>Ginkgo biloba</i>	21	C	1	U	1
Gb24B1U	<i>Ginkgo biloba</i>	24	B	1	U	1
Io10C1U	<i>Ilex opaca</i>	10	C	1	U	1
Jv19B1U	<i>Juniperus</i> <i>virginiana</i>	19	B	1	U	1
Mt35C2UM	<i>Magnolia</i> <i>tripetala</i>	35	C	2	U	1
Mgs25B1R	<i>Magnolia stellata</i>	25	B	1	R	1
Ms98C2UM	<i>Magnolia x</i> <i>soulangiana</i>	98	C	2	U	1
Msp8C1U	<i>Malus</i> species	8	C	1	U	2
Msp13C1U	<i>Malus</i> species	13	C	1	U	2
Msp14C1U	<i>Malus</i> species	14	C	1	U	1
Msp15C1U	<i>Malus</i> species	15	C	1	U	1
Msp16C1R	<i>Malus</i> species	16	C	1	R	1
Msp17C1U	<i>Malus</i> species	17	C	1	U	2
Msp18C1U	<i>Malus</i> species	18	C	1	U	1
Msp19C1U	<i>Malus</i> species	19	C	1	U	2
Pa32C1U	<i>Picea abies</i>	32	C	1	U	1

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Pp14B1U	<i>Picea pungens</i>	14	B	1	U	1
Ps14C1U	<i>Pinus strobus</i>	14	C	1	U	1
Ps2B1U	<i>Prunus serrullata</i>	2	B	1	U	1
Ps3A1U	<i>Prunus serrullata</i>	3	A	1	U	3
Ps18C1U	<i>Prunus serrullata</i>	18	C	1	U	2
Ps20C1U	<i>Prunus serrullata</i>	20	C	1	U	1
Psp14C1U	<i>Prunus species</i>	14	C	1	U	1
Psh14C1U	<i>Prunus subhirtella</i>	14	C	1	U	1
Pc3A1U	<i>Pyrus calleryana</i>	3	A	1	U	3
Qa14B1U	<i>Quercus alba</i>	14	B	1	U	1
Qp2B1U	<i>Quercus palustris</i>	2	B	1	U	5
Qp23C1R	<i>Quercus palustris</i>	23	C	1	R	1
Qp24C1R	<i>Quercus palustris</i>	24	C	1	R	1
Qp28B1R	<i>Quercus palustris</i>	28	B	1	R	1
Qp32D1R	<i>Quercus palustris</i>	32	D	1	R	1
Qph3A1U	<i>Quercus phellos</i>	3	A	1	U	1
Qph6A1U	<i>Quercus phellos</i>	6	A	1	U	1
Qph38C2U	<i>Quercus phellos</i>	38	C	2	U	1
Qr35D1R	<i>Quercus rubra</i>	35	D	1	R	3
Sv23B1UT	<i>Sciadopitys verticillata</i>	23	B	1	U	1
Sj18C1U	<i>Styphnolobium japonicum</i>	18	C	1	U	1
Tc48C1U	<i>Tilia cordata</i>	48	C	1	U	1
Tsp15B1U	<i>Tilia species</i>	15	B	1	U	1
Tsp18B1R	<i>Tilia species</i>	18	B	1	R	1
Tsp18C1R	<i>Tilia species</i>	18	C	1	R	1
Tsp19B1R	<i>Tilia species</i>	19	B	1	R	1
Tsp35B1UM	<i>Tilia species</i>	35	B	1	U	1
Up16C1U	<i>Ulmus parvifolia</i>	16	C	1	U	5

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### C. TREE ASSESSMENT SPECIES CODES

The following chart notes the species codes for trees inventoried and assessed at the Kingston Site.

Plant Code	Botanical Name	Common Name	Plant Category
Ac	<i>Acer campestre</i>	Hedge maple	Deciduous Tree
Ap	<i>Acer palmatum</i>	Japanese maple	Deciduous Tree
Apc	<i>Acer platanoides</i> 'columnare'	Columnar Norway maple	Deciduous Tree
Asc	<i>Acer saccharum</i> 'columnare'	Columnar Sugar maple	Deciduous Tree
Asp	<i>Acer</i> species	Maple species	Deciduous Tree
Co	<i>Celtis occidentalis</i>	Common hackberry	Deciduous Tree
Cc	<i>Cercis canadensis</i>	Eastern redbud	Deciduous Tree
Csp	<i>Chamaecyparis</i> species	Falsecypress	Evergreen Tree
Ck	<i>Cornus kousa</i>	Kousa dogwood	Ornamental Tree
Cj	<i>Cryptomeria japonica</i>	Japanese cryptomeria	Evergreen Tree
Fs	<i>Fagus sylvatica</i>	European beech	Deciduous Tree
Fsp	<i>Fraxinus</i> species	Ash species	Deciduous Tree
Gb	<i>Ginkgo biloba</i>	Ginkgo	Deciduous Tree
Io	<i>Ilex opaca</i>	American holly	Evergreen Tree
Jv	<i>Juniperus virginiana</i>	Eastern redcedar	Deciduous Tree
Mt	<i>Magnolia tripetala</i>	Umbrella magnolia	Ornamental Tree
Mgs	<i>Magnolia stellata</i>	Star magnolia	Ornamental Tree
Ms	<i>Magnolia x soulangiana</i>	Saucer magnolia	Ornamental Tree
Msp	<i>Malus</i> species	Crabapple	Ornamental Tree
Pa	<i>Picea abies</i>	Norway spruce	Evergreen Tree
Po	<i>Platanus occidentalis</i>	American Sycamore	Deciduous Tree
Pp	<i>Picea pungens</i>	Colorado spruce	Evergreen Tree
Ps	<i>Pinus strobus</i>	Eastern white pine	Evergreen Tree
Ps	<i>Prunus serrullata</i>	Japanese Cherry	Ornamental Tree
Psp	<i>Prunus</i> species	Cherry species	Ornamental Tree
Psh	<i>Prunus subhirtella</i>	Higan cherry	Ornamental Tree
Pc	<i>Pyrus calleryana</i>	Callery pear	Deciduous Tree
Qa	<i>Quercus alba</i>	White Oak	Deciduous Tree
Qp	<i>Quercus palustris</i>	Pin oak	Deciduous Tree
Qph	<i>Quercus phellos</i>	Willow oak	Deciduous Tree
Qr	<i>Quercus rubra</i>	Red oak	Deciduous Tree
Sv	<i>Sciadopitys verticillata</i>	Japanese umbrella pine	Evergreen Tree

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Sj	<i>Styphnolobium japonicum</i>	Japanese pagodatree	Ornamental Tree
Tc	<i>Tilia cordata</i>	Littlelead linden	Deciduous Tree
Tsp	<i>Tilia species</i>	Linden species	Deciduous Tree
Up	<i>Ulmus parvifolia</i>	Chinese elm	Deciduous Tree

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